

What Is Claimed Is:

1 1. A method for determining a network topology in a peer-to-peer
2 network, comprising:
3 performing a tracerouting operation to obtain a traceroute from a first
4 client to a directory server, wherein a traceroute is a map of the path through
5 which a packet travels between the first client and the directory server, including
6 addresses of the routers through which the packet travels;
7 sending the traceroute to the directory server from the first client; and
8 using the traceroute at the directory server to build a router graph, wherein
9 the router graph represents the topology of the peer-to-peer network.

1 2. The method of claim 1, further comprising:
2 performing a tracerouting operation between the first client and a second
3 client; and
4 sending the traceroute to the directory server.

1 3. The method of claim 1, further comprising:
2 determining the MAC address of the first client's gateway; and
3 sending the MAC address to the directory server, wherein the directory
4 server can use the MAC address to determine if any other clients are on the same
5 subnet as the first client.

1 4. The method of claim 1, further comprising:
2 sorting a list of addresses for routers received at the directory server from
3 the traceroutes; and

4 using the sorted list to determine which addresses are assigned to which
5 routers, wherein each router has two or more network interfaces and each
6 interface has an address.

1 5. The method of claim 1, further comprising using the router graph
2 to optimize data transfer within the peer-to-peer network.

1 6. The method of claim 1, further comprising classifying the first
2 client as a member of a router group based on the first public address found in the
3 traceroute, wherein the router group is a collection of clients that communicate
4 through a common router.

1 7. The method of claim 1, further comprising removing information
2 from the router graph if the information has not been validated for a specified
3 period of time.

1 8. A computer-readable storage medium storing instructions that
2 when executed by a computer cause the computer to perform a method for
3 determining a network topology in a peer-to-peer network, the method
4 comprising:
5 performing a tracerouting operation to obtain a traceroute from a first
6 client to a directory server, wherein a traceroute is a map of the path through
7 which a packet travels between the first client and the directory server, including
8 addresses of the routers through which the packet travels;
9 sending the traceroute to the directory server from the first client; and
10 using the traceroute at the directory server to build a router graph, wherein
11 the router graph represents the topology of the peer-to-peer network.

1 9. The computer-readable storage medium of claim 8, wherein the
2 method further comprises:
3 performing a tracerouting operation between the first client and a second
4 client; and
5 sending the traceroute to the directory server.

1 10. The computer-readable storage medium of claim 8, wherein the
2 method further comprises:
3 determining the MAC address of the first client's gateway; and
4 sending the MAC address to the directory server, wherein the directory
5 server can use the MAC address to determine if any other clients are on the same
6 subnet as the first client.

1 11. The computer-readable storage medium of claim 8, wherein the
2 method further comprises:
3 sorting a list of addresses for routers received at the directory server from
4 the traceroutes; and
5 using the sorted list to determine which addresses are assigned to which
6 routers, wherein each router has two or more network interfaces and each
7 interface has an address.

1 12. The computer-readable storage medium of claim 8, wherein the
2 method further comprises using the router graph to optimize data transfer within
3 the peer-to-peer network.

1 13. The computer-readable storage medium of claim 8, wherein the
2 method further comprises classifying the first client as a member of a router group
3 based on the first public address found in the traceroute, wherein the router group
4 is a collection of clients that communicate through a common router.

1 14. The computer-readable storage medium of claim 8, wherein the
2 method further comprises removing information from the router graph if the
3 information has not been validated for a specified period of time.

1 15. An apparatus for determining a network topology in a peer-to-peer
2 network, comprising:
3 a tracerouting mechanism configured to perform a tracerouting operation
4 to obtain a traceroute from a first client to a directory server, wherein a traceroute
5 is a map of the path through which a packet travels between the first client and the
6 directory server, including addresses of the routers through which the packet
7 travels;
8 an upload mechanism configured to send the traceroute to the directory
9 server from the first client; and
10 a graph building mechanism configured to use the traceroute at the
11 directory server to build a router graph, wherein the router graph represents the
12 topology of the peer-to-peer network.

1 16. The apparatus of claim 15, wherein the tracerouting mechanism is
2 further configured to perform a tracerouting operation between the first client and
3 a second client.

1 17. The apparatus of claim 15, further comprising:
2 a determination mechanism configured to determine the MAC address of
3 the first client's gateway;
4 wherein the upload mechanism is further configured to send the MAC
5 address to the directory server, wherein the directory server can use the MAC
6 address to determine if any other clients are on the same subnet as the first client.

1 18. The apparatus of claim 15, further comprising:
2 a sorting mechanism configured to sort a list of addresses for routers
3 received at the directory server from the traceroutes; and
4 a determination mechanism configured to use the sorted list to determine
5 which addresses are assigned to which routers, wherein each router has two or
6 more network interfaces and each interface has an address.

1 19. The apparatus of claim 15, further comprising an optimization
2 mechanism configured to use the router graph to optimize data transfer within the
3 peer-to-peer network.

1 20. The apparatus of claim 15, further comprising a classification
2 mechanism configured to classify the first client as a member of a router group
3 based on the first public address found in the traceroute, wherein the router group
4 is a collection of clients that communicate through a common router.

1 21. The apparatus of claim 15, further comprising a removal
2 mechanism configured to remove information from the router graph if the
3 information has not been validated for a specified period of time.